WHAT IS CLAIMED IS:

1. An optical system comprising a curved micro-electro-mechanical (MEMs) mirror comprising:

a mirror layer comprising a frame and at least one mirror movably coupled to the frame;

an actuation layer disposed adjacent the mirror layer comprising at least one actuator coupled to the mirror for controllably moving the mirror;

the mirror having a maximum dimension less than 3000 micrometers and a radius of curvature less than 200 millimeters.

2. The optical system of claim 1 wherein the actuator comprises an electromechanical actuator.

3. The optical system of claim 1 wherein the maximum dimension is less than 1000 micrometers and the radius of curvature is less than 80 millimeters.

4. The optical system of claim 1 wherein the mirror layer comprises a metal-coated substrate, the substrate having a thickness in the range 0.1 - 40 micrometers and the metal coating having a thickness in the range 5 nanometers to 5 micrometers.

5. The optical system of claim 4 wherein the metal coating comprises a metal selected from the group consisting of gold, silver, rhodium, platinum, copper and aluminum.

6. The optical system of claim 4 wherein the substrate comprises silicon.

7. The optical system of claim 4 wherein the substrate has a pair of major surfaces and comprises dopants implanted in the region of one major surface in sufficient concentration to curve the mirror to a radius of curvature less than 200 millimeters.

8. The optical system of claim 4 wherein the metal coating and the substrate have coefficients of thermal expansion that differ by more than a factor of 2.

9. A method of making a device having a curved MEMs mirror comprising the steps of:

providing a device having a mirror substrate with a maximum dimension less than 3000 micrometers, and

implanting into the substrate in a surface region thereof, a sufficient concentration of dopants to curve at least a portion of the substrate to a radius of curvature less than 200 millimeters.

10. The method of claim 9 wherein the substrate is curved to a radius of curvature less than 200 millimeters.

11. The method of claim 9 wherein the implanting is by ion implanting at a dosage in the range 10^{13} - 10^{17} ions/cm^3.

12. A method of making a device having a curved MEMs mirror comprising the steps of:

providing a device having a mirror substrate with a first thickness maximum dimension of less than 40 micrometers and a first coefficient of thermal expansion;

coating the substrate with a coating of metal having a second thickness and a second coefficient of the thermal expansion;

and heat treating the coated substrate to a temperature in the range 100-600° C, the first and second coefficients and thicknesses and the heat treating temperature chosen to curve at least a portion of the coated substrate to a radius of curvature less than 200 millimeters.

13. The method of claim 12 wherein the substrate is curved to a radius of curvature less than 200 millimeters.

14. The optical system of claim 1 including at least two optical fibers wherein the curved mirror is used to direct an optical beam from one optical fiber to the other.